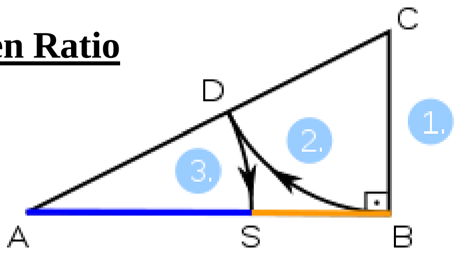
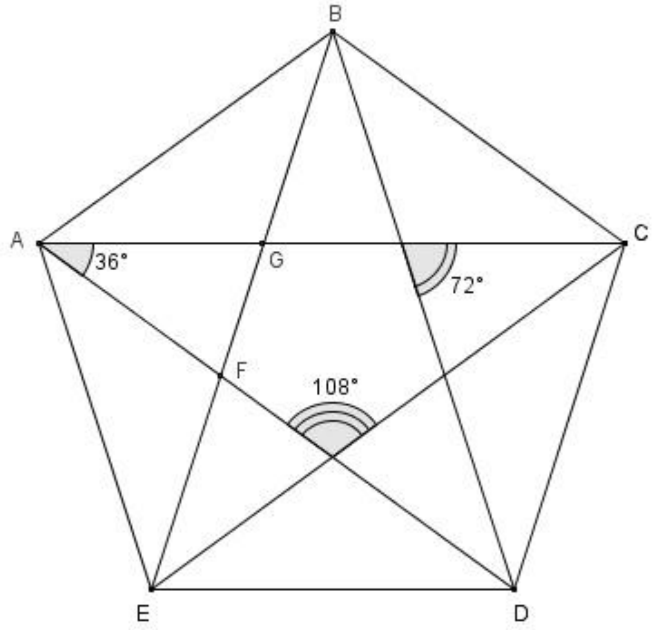
Activity 1 : Dividing a line segment according to the Golden Ratio



1. Having a line segment AB, construct a perpendicular BC at point B, with BC half the length of AB. Draw the hypotenuse AC.
2. Draw a circle with center C and radius BC. This circle intersects the hypotenuse AC at point D.
3. Draw a circle with center A and radius AD. This circle intersects the original line segment AB at point S. Point S divides the original segment AB into line segments AS and SB with lengths in the golden ratio.

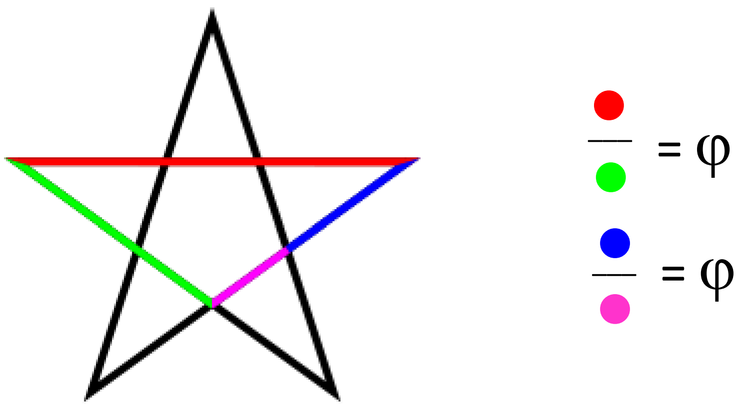
Activity 2 : Regular pentagon & Pentagram (or five pointed star)

Here is a regular pentagon, and we drew its diagonals.



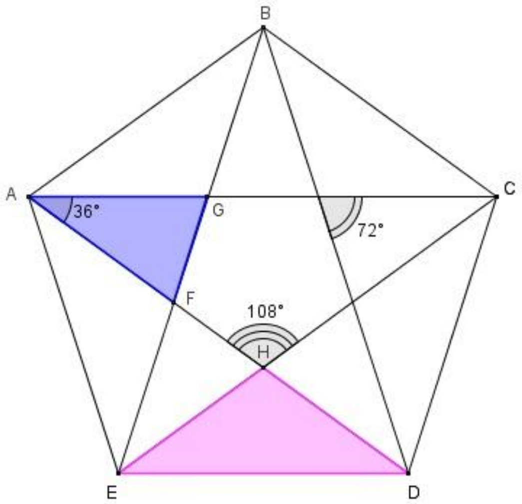
The golden ratio shows up everywhere in the pentagram and its circumscribed pentagon.

In a regular pentagon, ***the ratio between a diagonal and a side is φ, while intersecting diagonals section each other in the golden ratio.***



The golden ratio plays an important role in the geometry of pentagrams. Each intersection of edges sections other edges in the golden ratio. Also, the ratio of the length of the shorter segment to the segment bounded by the two intersecting edges (a side of the pentagon in the pentagram's center) is φ, as the four-color illustration shows.

The pentagram includes ten isosceles triangles: five acute and five obtuse isosceles triangles. In all of them, the ratio of the longer side to the shorter side is φ. The acute triangles are **golden triangles** (angles : 36°, 36°, 72°). The obtuse isosceles triangles are **golden gnomons** (angles : 36°, 36°, 108°).



Activity 3 : The symbolicness of the pentagram

-

-

-

-

-

-

Activity 4 : Making a Paper Knot to show the Golden Section in a Pentagon

Here's an easy method to show the golden section by making a **Knotty Pentagram**.
Cut off a strip of paper a couple of centimetres wide from the long side of a piece of paper. If you tie a knot in the strip and put a strong light behind it, you will see a pentagram with all lines divided in golden ratios.